



**COUNTY OF ORANGE  
HEALTH CARE AGENCY**

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**PUBLIC HEALTH  
EPIDEMIOLOGY & ASSESSMENT**

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**West Nile Virus in Orange County**

A 57 year-old Orange County resident died in late June from West Nile Virus (WNV) encephalitis and additional human cases are expected. Birds and mosquitoes in many areas of the County have also tested positive for WNV.

WNV is a mosquito-borne virus that causes infections classified as **West Nile Fever (WNF -- fever, headaches, myalgias, lymphadenopathy, rash, fatigue and weakness)** in ~20% of cases and **West Nile Neuroinvasive Disease (WNND -- meningitis, encephalitis, or acute flaccid paralysis)** in <1% of those infected. The remainder of infections (~80%) are asymptomatic. Although WNV can affect people of all ages, persons over the age of 50 years and/or with immunocompromising conditions are at increased risk for severe disease (e.g., WNND). Knowledge about WNV disease continues to evolve--new modes of transmission (transfusion, transplantation, transplacental, breastfeeding, occupational) have been identified, and recent experience in Colorado in 2003 suggests that WNF may not always be mild or short-lived.

Physicians throughout Orange County should have a heightened index of suspicion for WNV infection and submit specimens from suspected cases for testing. **In particular, testing for WNV should be done on the following patients:**

- **all hospitalized patients with encephalitis**
- **all hospitalized patients with acute flaccid paralysis**
- **all hospitalized adults ( ≥18 years of age) with aseptic meningitis**

**WNV testing should also be considered in select patients <18 years of age with aseptic meningitis (especially with negative enterovirus polymerase chain reaction (PCR) and/or exposure to mosquitoes) and select patients with prolonged febrile illness ( ≥7 days).** Diagnosis is best made by serology (IgM or acute and convalescent IgG) for WNV. In some cases, confirmatory testing is necessary with plaque reduction neutralization tests (PRNT) to rule out cross-reactivity with other flaviviruses. Serology may be negative early in the course of disease (especially within the first week after onset of symptoms in WNF patients), therefore repeat serology in 3-5 days may be helpful if there is a strong clinical suspicion. PCR of CSF for enterovirus is helpful to rule out this more common virus in patients with aseptic meningitis and/or encephalitis in the summer and fall. WNV testing of possible cases is available through Orange County (OC) Epidemiology (714-834-8180) and some commercial laboratories. Making the diagnosis of WNV infection can spare the patient unnecessary treatment for other conditions in the differential. In addition, clinical trials are available for patients with or at risk for WNND.

Encephalitis and meningitis due to any cause are reportable conditions under California law. Cases should be reported within one working day to OC Epidemiology (714-834-8180). West Nile Fever and WNND are also reportable diseases and should be reported within one working day of identification. If OC Epidemiology receives a report of positive testing for WNV directly from a laboratory, we will contact the referring physician to inform him/her and request that he/she notify the patient (or family, if patient is incapacitated or deceased). If the referring physician is unable or unwilling, OC Epidemiology can assist in the matter.

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## **WNV PREVENTION**

Avoid mosquito bites by:

- Eliminating standing water around your home and neighborhood
- Using insect repellent with DEET (see below) while outside
- Wearing long pants and long sleeved-shirts when possible while outside
- Avoiding outdoor activity at dawn, sunset and for 2 hours following sunset
- Maintaining intact, tight-fitting screens on all windows and doors.

### **Insect Repellent**

An effective repellent will contain DEET (N,N-diethyl-meta-toluamide also known as N,N-diethyl-3-methylbenzamide).

- The protection time increases with the concentration of DEET, up to a concentration of 50%.
- A repellent containing 30% DEET is effective in adults; recently the American Academy of Pediatrics (AAP) stated that 30% DEET is as safe as 10% DEET when used according to the directions on the product label (see <http://www.aap.org/family/wnv-jun03.htm>). DEET is not recommended for use in children under 2 months of age.

Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. When using insect repellent on children, apply sparingly to exposed skin. Apply it to your own hands and then rub them on your child. Avoid children's eyes and mouth and use it sparingly around their ears.

Do not apply repellent to skin under clothing. If repellent is applied to clothing, wash treated clothing before wearing again.

Keep repellents out of reach of children.

**Whenever you use an insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.**

For more information on the use of insect repellent in children:

Centers for Disease Control and Prevention (CDC):

[http://www.cdc.gov/ncidod/dvbid/westnile/ga/insect\\_repellent.htm](http://www.cdc.gov/ncidod/dvbid/westnile/ga/insect_repellent.htm)

American Academy of Pediatrics: <http://www.aap.org/family/wnv-jun03.htm>

National Pesticide Information Center: 1-800-858-7378 or <http://npic.orst.edu/>

## **ADDITIONAL RESOURCES**

### **General**

Orange County Health Care Agency: <http://www.ochealthinfo.com/epi/wnv/index.htm>

Health Referral Line: 800-564-8448 (Monday-Friday, 8 am-5 pm)

California Department of Health Services: <http://www.westnile.ca.gov>

877-WNV-BIRD (for dead bird reporting and recorded information)

Centers for Disease Control and Prevention (CDC):

<http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>

[http://www.cdc.gov/ncidod/dvbid/westnile/clinical\\_guidance.htm](http://www.cdc.gov/ncidod/dvbid/westnile/clinical_guidance.htm)

English 888-246-2675; Spanish 888-246-2857; TTY 866-874-2646

### **Children**

Evaluation of Infants Born to Mothers Infected With West Nile Virus During Pregnancy

(<http://www.cdc.gov/ncidod/dvbid/westnile/congenitalinterimguidelines.htm>)